Supplemental Environmental Assessment for the Cow Catcher Timber Sale

EA #OR-105-04-10
(Supplement to EA # OR-105-98-05)

U.S. Department of the Interior, Bureau of Land Management
Roseburg District Office
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Comments, including names and street addresses of respondents, will be available for public review at the above address during regular business hours, 8:00 A.M. to 4:30 P.M., Monday through Friday, except holidays.

Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by the law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

In keeping with Bureau of Land Management (BLM) policy, Roseburg District Environmental Assessments (EAs), Environmental Impact Statements, Findings of No Significant Impact (FONSIs), and Decision Records/Documentations are posted on the district web page under **Planning & Environmental Analysis** at www.or.blm.gov/roseburg, on the same day in which legal notices of availability for public review and notices of decision are published in the *News-Review*. Individuals who desire a paper copy of such documents will be provided with one upon receipt of a request. The BLM encourages those individuals who have the capability to access these documents on-line to do so. Internet use reduces the consumption of paper and administrative costs associated with copying and mailing.

Due to the fact that this document supplements an EA that was previously made available for public review and comment between June 17, 2003, and July 17, 2003, BLM will only accept comments regarding the two issues identified in Chapter One of this supplemental analysis. These are the direct, indirect and cumulative effects of the Cow Catcher timber sale on populations of red tree voles residing in the project area and watershed, and consistency of the timber sale with management direction for regeneration harvest in the Connectivity/Diversity Block land use allocation.

Chapter One – Purpose and Need

Background/Introduction

On June 17, 2003, the South River Field Office, Roseburg District BLM issued the Cow Catcher Timber Sale EA (USDA, BLM 2003a), providing a 30-day period for public comment from June 17, 2003, through July 17, 2003. The EA proposed regeneration harvest of 155 acres of lands allocated to the General Forest Management Area and Connectivity/Diversity Block land use allocations consistent with management direction contained in the Roseburg District *Record of Decision and Resource Management Plan* (USDI, BLM 1995a (ROD/RMP).

Following the period for public comment, the South River Field Office considered the comments submitted and on August 25, 2003, issued a decision to proceed with the proposed timber sale. The decision authorized regeneration harvest of 146 acres; 65 acres allocated as General Forest Management Area and 81 acres as Connectivity/Diversity Block. The timber sale was sold on September 23, 2003. Following the disposition of a protest and administrative appeal, the sale was awarded to the high bidder on January 6, 2004. The Purchaser has completed harvest of 27 acres that comprise Unit 4 of the sale.

The timber sale decision was subsequently challenged in the United States District Court for the District of Oregon. (Case No. 03-3124-CO) On May 18, 2004, Judge Michael R. Hogan issued a ruling that enjoined further implementation of the timber sale ". . . until final resolution of plaintiff's claims in this court, or until BLM completes a sufficient supplemental NEPA analysis that analyzes effects and cumulative effects of the project on red tree voles, and discloses the basis for the BLM conclusion that the project complies with management directives for connectivity/diversity blocks."

Purpose

The purpose of this analysis is to supplement the analysis contained in the Cow Catcher Timber Sale EA in order to provide additional information addressing the two issues identified in Judge Hogan's ruling. The purpose of the project, as explained in the EA (p. 1), is to ". . . provide a sustainable supply of timber and other forest commodities." consistent with management direction from the ROD/RMP (p. 33).

Need

There is a need for this analysis in order to comply with the ruling of the Court and provide sufficient information for the public and agency decision maker to understand further how the timber sale will affect red tree voles, and how the timber sale complies with management direction for regeneration harvest in the Connectivity/Diversity Block land use allocation.

As discussed in the Cow Catcher EA (pp. 1-2), there is a need for the timber sale in order to: meet the Roseburg District's declared objective of an annual allowable sale quantity (ASQ) of 45 million board feet (ROD/RMP, p. 8); contribute toward the socioeconomic objectives described in the Roseburg District *Proposed Resource Management Plan/Environmental Impact Statement*

(USDI, BLM 1995b, PRMP/EIS) which estimated that BLM programs (including timber sales) would support 544 jobs and provide $9.333 million in personal income annually during the life of the plan (PRMP/EIS,Vol. I, p. xii); and to meet the requirements of the O&C Act which stipulates that suitable commercial forest lands revested by the government from the Oregon and California Railroad are to be managed for the sustained production of timber.

Chapter Two – Addendum to Cow Catcher Timber Sale Effects Analysis

I. Direct, Indirect and Cumulative Effects to Red Tree Voles

The red tree vole is an arboreal rodent that primarily inhabits Douglas-fir where it nests and feeds, though it has been known to feed on the needles of other conifers, including western hemlock, Sitka spruce and true firs.

Primary habitat is generally characterized as old-growth and older mixed-aged stands with conifers $\geq$ 20 inches diameter-breast-height (dbh) (USDA, USDI 2000a, p. 377). Version 2.0 of the red tree vole survey protocol (USDA, USDI 2000b) indicates that primary habitat in the Mesic Zone includes those stands with a Quadratic Mean Diameter $\geq$ 18 inches dbh.

In a non-high priority site analysis conducted for the Bland Days Commercial Thinning timber sale it was determined that an average stand diameter of 20 inches dbh is typically attained at age class 80-90 years within the South Umpqua 5th field watershed (USDI, 2002, p. 1). The Lower Cow Creek watershed is adjacent to the South Umpqua watershed and growing conditions in the two watersheds are comparable because they are in the same geographic locale with equivalent precipitation, elevation, forest types, soil types, and stand productivity. For analytical purposes it is assumed that an 80-90 year old stand will typically average at least 20 inches dbh. In order to analyze the entire effects of the Cow Catcher timber sale on red tree voles it was assumed that Unit 4 was intact, even though harvest of the unit was completed on April 17, 2004.

Among the assumptions utilized in the PRMP/EIS (Vol. I, p. 4-4) as a basis for analyzing impacts was the assumption that ". . . most private forest lands would be intensively managed with final harvest on commercial economic rotations averaging 50 years." As indicated by the analysis above, these rotational lengths would not be sufficiently long to allow private forest lands to grow trees large enough to provide primary red tree vole habitat. Older stands will provide habitat until they are harvested, but are not assumed to be a factor afterwards.

Trees designated for cutting in the units of the Cow Catcher timber sale are an average 19 inches dbh. The stand ages range from 110-220 years old. While the stated average diameter would appear inconsistent with assumptions made in the previous paragraph, the 19 inch average diameter does not reflect the retention tree component that is reserved from cutting.

Within the timber sale units there are, on average, 6½ trees per acre in the General Forest Management Area and 13½ trees per acre in Connectivity/Diversity Block that are reserved from cutting to meet retention trees requirements (CC AR at 284-288). Management direction specifies (RMP at 150 and 152) that the selection of retention trees reflects species composition of the stand(s) and the full range of diameter classes 20 inches and greater. For all units, there are 1,513 retention trees, with a mean dbh of between 30 and 32 inches. There are also 106 hardwoods with a mean dbh of approximately 24 inches. If factored in with the trees designated for cutting, average trees diameter within the units would equal or exceed 20 inches dbh.

The units represent 146 acres of suitable, primary habitat for red tree voles. The total area of BLM-managed lands within the Lower Cow Creek watershed is 39,945 acres. As illustrated in Table 1, 26,951 acres or 68 percent of the BLM-managed lands within the watershed provide primary red tree vole habitat. Eighty-five percent of the total primary habitat (22,862 acres) is allocated as either Late-Successional Reserve or Riparian Reserve, and would not be subject to either regeneration harvest or density management in conjunction with the Cow Catcher timber sale.

Stands 40-79 years old, with an average diameter < 18 inches dbh are also expected to fulfill some role as habitat. The extent to which these young stands play a role in red tree vole population dynamics is not fully understood, however. Red tree voles have been documented nesting and successfully reproducing in younger stands (USDA, USDI 2004 p. 206; McGraw pers. obs.), but no long-term studies or monitoring have occurred which would provide temporal information with which to assess persistence of nest sites in younger stands or the rates of colonization (USDA, USDI, 2000, p. 378). The contribution of these stands as red tree vole habitat is considered in this analysis, however.

As displayed in Table 1, there are 3,964 acres of young stands in the watershed that provide some form of usable habitat, but are not considered primary habitat. Of this amount, 2,864 acres or 72 percent is located in Late-Successional or Riparian Reserves where timber harvest is not a management objective.

In March, 2004, the *Record of Decision to Remove or Modify the Survey and Manage Mitigation Standards and Guidelines* (USDA, USDI 2004b) removed the management provisions of the Survey and Manage standards and guides, including the need for pre-disturbance surveys for species that included the red tree vole. The decision did not provide new information pertaining to the red tree vole that was not known by the BLM at the time of completion of the Cow Catcher timber sale EA, as the need for pre-disturbance surveys for red tree voles was removed in the area of the timber sale on June 14, 2002, following the 2001 Annual Species review.

On the Roseburg District, the red tree vole is now classified as a Bureau Tracking species. The Oregon/Washington BLM Special Status Species Program encourages data collection on Bureau Tracking species, but they are not considered special status species for management purposes, and no specific management action is required or indicated.

Direct Effects

Harvest of the Cow Catcher timber sale will remove 146 acres of primary habitat, with the expected resultant loss of any red tree vole nests and any red tree voles that may be present. The Cow Catcher timber sale will affect slightly more than one-half of one percent (0.54%) of the 26,951 acres of primary red tree vole habitat provided by federal lands in the watershed. The timber sale units are not expected to function as primary habitat after harvest because the required retention trees will remain after harvest will not provide sufficient nest trees or canopy cover to support viable red tree vole populations.

Although nests and voles may be lost within the harvest units of the timber sale, there is sufficient habitat to support stable red tree vole populations throughout the watershed. As described above, nearly 27,000 acres of primary habitat will remain on BLM-managed lands within the watershed, post-harvest, and 85 percent of this area is located in Late-Successional Reserves and Riparian Reserves where the prevailing management objectives are for the maintenance and development of old-growth forest habitat and the improvement of aquatic habitat conditions, respectively, not timber harvest. Nearly 2,900 acres of stands 40-79 year old will also remain available as additional potential habitat for the long term as they are located in reserved land allocations. The remaining 1,100 acres of 40-79 year old stands are in the Matrix allocations and will provide habitat until they are designated for harvest in the future.

As addressed in the 2004 *FSEIS to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines*, within the area of the Northwest Forest Plan there is sufficient habitat to support stable populations of red tree voles, range-wide, although there is insufficient habitat to support stable populations in the northern Coast Range of Oregon (USDA, USDI, 2004, p. 208). The Roseburg District is located in the mesic zone, an area not included in the northern Coast Range (USDA, USDI, 2004, p. 205).

Indirect Effects

Northern spotted owls are known to prey upon red tree voles (USDA, USDI, 1990, p. 201). The importance of a given prey species in the diet of northern spotted owls varies among geographic regions and individual owl pairs. In the Klamath Mountains of Oregon, an area which encompasses the Cow Catcher project area, studies have found that red tree voles comprised 4.9 percent of spotted owl diet by number of individual prey items and slightly less than one (0.9) percent of spotted owl diet by total prey biomass consumed. The same studies indicate that the dominant prey for spotted owls in the Klamath Mountains is the dusky-footed woodrat, which comprises 39 percent of owl diet by number of prey items and 69.9 percent by total prey biomass consumed (Forsman *et al*., 1984).

The Cow Catcher timber sale was included in the Biological Analysis as part of the consultation package with the U. S. Fish and Wildlife Service regarding the *FY2003-2008 Programmatic Assessment for Disturbance Activities and Management Activities Which Remove Habitat* (USDI, 2002b). Suitable habitat for northern spotted owls includes nesting, roosting, and foraging habitat. The effect on northern spotted owls by removing 146 acres of suitable habitat in the Cow Catcher timber sale through regeneration harvest was determined to be "may effect: likely to adversely effect." In its Biological Opinion, the U. S. Fish and Wildlife Service issued a "take" statement associated with the removal of suitable habitat in association with regeneration harvest (USDI, USFWS, 2003). Prey base in the timber sale units would be lost or displaced, consistent with the loss of function of the areas as foraging habitat for spotted owls.

Cumulative Effects

As described on page 3 of this document, stand age can be used to predict the point at which trees in a stand will reach an average dbh sufficient to provide suitable, primary habitat for red

tree voles. For the Lower Cow Creek watershed, 80 years of age is considered to be the age at which forest stands would provide such habitat. At present, there are no authorized regeneration timber sales in the watershed other than the Cow Catcher timber sale. By projecting current age class distributions into the future, and allowing for anticipated future timber harvest in the watershed, acreage in individual 10-year age classes was estimated at 10-year intervals over the next 100 years (Appendix B). There are no authorized but unawarded sales

The 100-year analytical timeframe was selected for consistency with the long-range assumptions utilized in the analysis contained in the PRMP/EIS. This analysis projected the effects of seven different management alternatives on seral stage distribution over a period of 100 years. The current RMP is identified as PRMP in Figure 4-5 (PRMP/EIS, Vol. I, p. 4-27).

Based on this analysis, in 100 years (2104), it is projected that there will be sufficient habitat in the Lower Cow Creek watershed to support stable populations of red tree voles. Under present management direction, 92 percent, or 36,641 acres of the 39,945 acres of BLM-administered lands in the watershed is projected to be primary habitat within this time period. Ninety percent of all primary habitat, or 32,963 acres, would remain in reserved land use allocations withdrawn from timber harvest.

Table 1. Red Tree Vole Habitat within the Cow Creek 5th Field Watershed on BLM-administered lands. Current age-class distributions by land use allocation are based on the Forest Operations Inventory (FOI). Data presented for the projected condition in 100 years is based on analysis contained in Appendix B.

Age Class	Land Use Allocation	Direct Effects			Cumulative Effects
		Current Condition (acres)	Cow Catcher Sale Units (acres)	Post-Harvest Condition (acres)	Projected Condition in 100 years (acres)
> 80 yrs	Matrix	4,089 (15%)	146	3,943 (15%)	3,678 (10%)
	Reserves	22,862 (85%)	0	22,862 (85%)	32,963(90%)
	Total	*26,951*	*146*	*26,802*	*36,641*
40-79 yrs	Matrix	1,100 (28%)	0	1,100 (28%)	1,898 (100%)
	Reserves	2,864 (72%)	0	2,864 (72%)	0
	Total	*3,964*	*0*	*3,964*	*1,898*
20-39 yrs	Matrix	1,673 (19%)	0	1,673 (19%)	650 (100%)
	Reserves	7,072 (81%)	0	7,072 (81%)	0
	Total	*8,745*	*0*	*8,745*	*650*
0-19 yrs	Matrix	98 (37%)	0	98 (37%)	734 (100%)
	Reserves	165 (63%)	0	165 (63%)	0
	Total	*263*	*0*	*263*	*734*

Considering long-term availability of primary habitat and that the Cow Catcher timber sale affects only about one-half of one percent of the currently available primary habitat, the effect of the timber sale on red tree vole populations in the watershed would be inconsequential.

Since the red tree vole constitutes such a small component of spotted owl diet in the Klamath Mountains (0.9 percent of prey biomass) and because the timber sale removes such a small component (0.54 percent) of primary red tree vole habitat, the effect of the timber sale on spotted owl prey base in the watershed would be inconsequential.

II. Compliance with Management Direction for Regeneration Timber Harvest within the Connectivity/Diversity Block Land Use Allocation

The ROD/RMP designated the Matrix as the portion of the District lands where timber harvest and other silvicultural activities would be emphasized. The Matrix is composed of the General Forest Management Area and Connectivity/Diversity Block land use allocations. The ROD/RMP (p. 8) allocated 26,900 acres as Connectivity/Diversity Blocks on the entire Roseburg District. The size of individual Blocks is variable, but generally approximates one square mile.

Resource condition objectives for the land use allocation include:

- Management to provide ecotypic richness and diversity and to provide for habitat connectivity for old-growth dependent and associated species within the General Forest Management Area. (ROD/RMP, p. 151)

- Management of suitable commercial forest land to assure a moderately high level of sustained timber production. (ROD/RMP, p. 151)

With respect to regeneration timber harvest, the following management direction was provided in order to meet the stated objectives.

For individual blocks:

- Maintain 25 to 30 percent of each block in late-successional forest at any point in time. Inclusions of Riparian Reserves and other allocations with late-successional forest within the gross mapped Connectivity/Diversity Blocks count toward this percentage. Blocks may be comprised of contiguous or noncontiguous BLM-administered land. The size and arrangement of habitat within a block will provide effective habitat to the extent possible. (ROD/RMP, p. 34)

- Manage available forest land within each block on a 150 year control rotation. (ROD/RMP, p. 34)

Within the entire Connectivity/Diversity land use allocation:

- Regeneration harvest will only be programmed for late-successional stands. Connectivity/Diversity Block area would be managed using a 150 year control rotation. Regeneration harvest will be at the rate of 1/15 of available acres in the entire Connectivity/Diversity Block land use allocation per decade. (ROD/RMP, pp. 152-3)

Individual Connectivity/Diversity Blocks

As described in the Cow Catcher Timber Sale EA (p. 7; CC AR at 375)[1]:

> "Sections 9 and 17 are allocated to a Connectivity/Diversity Block. Management objectives include the maintenance of 25-30 percent of the Block as late-successional forest in order to provide dispersal pathways between Late-Successional Reserves (ROD/RMP, p. 34). In Section 9, there are 556 acres of late-successional forest representing approximately 88 percent of the 628 acres in the section. In Section 17, there are 225 acres of late-successional forest, or 39 percent of the 649 acres."

The Cow Catcher Timber Sale EA proposed harvest of two units within Connectivity/Diversity Blocks. As proposed in the EA (p. 5, CC AR at 373), Unit E consisted of 60 acres in Section 9 and Unit F consisted of 18 acres in Section 17. The timber sale decision authorized harvest of 81 acres within Connectivity/Diversity Blocks (CC AR at 267). Unit 4 (Unit F) is identified as 27 acres in the timber sale prospectus and Unit 5 (Unit E) as 54 acres (CC AR at 251).

Following the harvest of Unit 4, the area within Section 17 composed of late-successional forest was reduced to 198 acres. This represents 30.5 percent of the total area in the Block. The planned harvest of Unit 5 would reduce the area in late-successional forest to 502 acres, representing 80 percent of the 628 acres in that respective Block. In both instances, the planned regeneration harvest is consistent with management direction to maintain 25 to 30 percent of individual Blocks in late-successional forest condition.

Entire Connectivity/Diversity Block Land Use Allocation

Forest Operational Inventory[2] and data from other internal BLM inventories and data established the age of the stands comprising Units 4 and 5 of the Cow Catcher timber sale, which are located within Connectivity/Diversity Blocks, as approximately 225 years. The minimum rotation age for regeneration harvest of late-successional forest in this land use allocation is 150 years, as noted above. The authorized regeneration harvest of Units 4 and 5 of the Cow Catcher timber sale is consistent with this management direction.

1 The citation "CC AR" refers to the administrative record publicly filed with the United States District Court for the District of Oregon (Case No. 03-3124-CO).

2 Forest Operational Inventory is an intensive, site-specific inventory of stand location, size, silvicultural needs, and recommended treatment that is based on individual stand conditions and productivity.

On a decadal basis, approximately 1,790 acres are available for regeneration. This figure is based upon the acreage allocated to Connectivity/Diversity Blocks for the entire Roseburg District and an allowable regeneration harvest of 1/15 of the entire land use allocation on a decadal basis.

Accomplishments implemented under the Roseburg District ROD/RMP are reported annually in the *Roseburg District Annual Program Summary* (APS) *and Monitoring Report*, including those related to the Roseburg District timber sale program. The 2003 APS (USDI, BLM 2003b) reports sale volume and acres for the period of FY1995 through FY 2003. The ROD/RMP was approved and implemented in 1995, establishing the baseline against which all activities and accomplishments are measured. As this was the year in which the Connectivity/Diversity Block land use allocation was created, 1995 is also the beginning of the "decade", for the purpose of measuring compliance with decadal harvest limitations. As illustrated in the 2003 APS (Table 18, p. 33) and summarized in Table 2 below, for the period of FY 1995 through FY 2003, 490 acres of regeneration harvest have been authorized in the entire Connectivity/Diversity Block land use allocation.

Table 2 - Regeneration Harvest Authorized in Connectivity/Diversity Block by Fiscal Year

	FY 95	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03
Acres	32	40	123	151	63[1]	0	0	0	81
∑	32	72	195	346	409	409	409	409	490[2]

[1] Misreported in the 2003 APS as 36 acres.
[2] Reported in 2003 APS as 463 acres because of error noted above.

Of the 490 acres sold, only 222 acres have been harvested, including Unit 4 of the Cow Catcher timber sale. Of the remaining acres, 214 are unawarded pending the resolution of administrative appeals or other legal challenges. Fifty-four acres, represented by Unit 5 of the Cow Catcher timber sale, are presently enjoined from harvest. These figures are described in further detail by sale name, acres and status in Appendix A.

No sales are planned or scheduled to be offered in FY 2004 which contain lands allocated to Connectivity/Diversity Blocks. In FY 2005, the Swiftwater and South River Field Offices of the Roseburg District collectively plan on offering an estimated 421 acres of regeneration harvest in the Connectivity/Diversity Block land use allocation. When added to the acreage that has already been authorized, planned regeneration harvest for the entire land use allocation totals 911 acres or 50.8 percent of the decadal allowance authorized by the ROD/RMP. In this respect, the Cow Catcher timber sale is consistent with management direction from the ROD/RMP.

Chapter Three – Preparers; Organizations Contacted

A Notice of Availability of the environmental assessment will be published in *The News-Review*, Roseburg, Oregon, as will any subsequent decision notice.

I. Preparers

Paul Ausbeck	Writer/Editor, Environmental Coordinator, South River Field Office
Jay Besson	Timber Sale Planner, South River Field Office
Larry Brooks	Timber Sale Planner, Swiftwater Field Office
Phil Hall	Planning and Assessment Coordinator, Roseburg District
Craig Kintop	Silviculturist, Roseburg District
Rex McGraw	Wildlife Biologist, Swiftwater Field Office
John Royce	Acting Field Manager, South River Field Office

II. Organizations to Be Notified of Completion of the Environmental Assessment

Cascadia Wildlands Project
Haglund, Kelly, Horngren & Jones, LLP
Klamath Siskiyou Wildlands Center
Umpqua Watersheds, Inc.
U.S. Fish and Wildlife Service

Literature Cited

Forsman, E.D., E.C. Meslow and H.M. Wight. 1984. The Spotted Owl in Oregon. Wildlife Monographs 87: 1-64.

USDA, USDI. 1990. A Conservation Strategy for the Northern Spotted Owl, Interagency Scientific Committee to Address the Conservation of the Northern Spotted Owl. Portland, OR. 427pp.

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USDI, BLM. Roseburg District. 1995b. Proposed Resource Management Plan/Environmental Impact Statement.

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USDI, BLM. 2002b. FY 2003-2008 Programmatic Assessments for Disturbance Activities and Management Activities Which Remove Habitat. Roseburg, Oregon. 52pp.

USDI, BLM. Roseburg District. South River Field Office. 2003a. Cow Catcher Timber Sale Environmental Assessment. 45 pp.

USDI, BLM. Roseburg District. 2003b. Roseburg District Annual Program Summary and Monitoring Report. 128 pp.

USDI, U.S. Fish and Wildlife Service. 2003. Formal Consultation & Written Concurrence on FY2003-2008 Management Activities. Ref. No. 1-15-03-F-160. Roseburg, OR. 77 pp.

Appendix A

Status of Regeneration Harvest Authorized In the Connectivity/Diversity Block Land Use Allocation on the Roseburg District FY 1995-2003

Sale Name	FY Sold	Acres in Connectivity/Diversity Block Allocation	Current Sale Status
Right View	1995	32	Harvested
High Noon	1996	40	Harvested
Red Top Salvage I	1997	123	Harvested
Buck Fever	1998	67	Unawarded
Class of 98	1998	22	Unawarded
Dream Weaver	1998	26	Unawarded
Christopher Folley	1999	63	Unawarded
Final Curtin	1999	36	Unawarded
Cow Catcher	2003	27 (Unit 4)	Harvested
Cow Catcher	2003	54 (Unit 5)	Enjoined
Total		490	

Appendix B

Projection of Forest Stand Age Classes in the Cow Creek WAU Present to 100 Years into the Future

Following is a description of analytical assumptions and results of the projection of Cow Creek age classes for the next 100 years. The projection factors in regeneration timber harvests over time, but does not assume any significant natural disturbance events which would alter age class characteristics in any decade. In the event of a large-scale disturbance, such as a wildfire or windthrow event, age class distributions would be shifted to an increased percentage of younger stands.

Data Used:

- Current FOI acreages by ten-year age classes
- Table HH-14 - Acres Harvested by Age Class by Decade; Roseburg District PRMP/EIS, Vol. II, Appendices, p. 233 and unpublished data from the district inventory specialist
- Table of Proportionate Regeneration Harvest Allocation by Acreage for Analytical and Planning Watersheds[3]

Analytical Assumptions:

- Age classes were projected in ten-year increments up to age class 80. Stands age 80+ were lumped into a single age class (existing late-successional stands).

- No change in the acreage of BLM-administered lands classified as commercial forest land was assumed for the projection period.

- Only regeneration harvest acres were considered in the analysis since only regeneration harvest affected age class distributions.

- No distinction was made between GFMA and Connectivity/Diversity Block harvest (rotation) ages. Since the end point of 100 years from present was the main interest of the analysis and all existing Connectivity/Diversity Block late-successional acreage would likely be harvested in that period, the increased complexity of trying to project the acres separately was felt to be unwarranted.

- No regeneration harvest was assumed in the Late-Successional or Riparian Reserves.

[3] unpublished Roseburg District report dated January 3, 1995

- BLM harvest in the watershed was determined by factoring the district harvest acres listed in Table HH-14 of the PRMP/EIS by proportions derived from the Table of Proportionate Regeneration Harvest Allocation by Acreage for Analytical and Planning Watersheds. Fifty-four percent of the district acres available for regeneration harvest acres in the first RMP decade are located in the South River Resource Area. Twelve percent of the Resource Area's available harvest acres in the first decade are located in the Cow Creek Watershed. The same proportion of Resource Area harvest from the watershed was assumed for all decades.

- Projection of age class changes was done using an Excel spreadsheet.

- The 100-year analytical timeframe was selected for consistency with the long-range assumptions utilized in the analysis contained in the PRMP/EIS. This analysis projected the effects of seven different management alternatives on seral stage distribution over a period of 100 years (PRMP/EIS, Vol. I, Chapter 4-27, Figure 4-5).

- Agricultural and other non-forest areas were excluded from the projections. It was assumed that there would be no change in these land use categories during the projection period.

- No significant changes in BLM management plans and rules were assumed during the analysis period.

- No natural disturbances affecting significant acreage were assumed over the analysis period.

Results:

Figures 1 and 2 illustrate the trend in the amount late-successional forest in the watershed over the next century. The trend reflects Matrix harvest, and the anticipated lack of harvest in mature forest stands allocated to Late-Successional and Riparian Reserves.

The amount of late-successional stands decline slightly (maximum 3 percent) from the current condition for the next three decades due to regeneration harvesting, and the existing age class distribution on federal lands. After the third decade, the amount of late-successional forest increases, as the federal Reserve land use allocations "age-up" and annual regeneration harvest levels decline to about half that of the first few decades. By the end of the sixth decade there is approximately 34 percent more late-successional forest in the watershed than at present. The amount of late-successional forest remains near this level for the rest of the projection period.

On the average, regeneration harvest is anticipated to be about 80 acres per year in the watershed for the first few decades, declining to about 35 acres per year by the 10^{th} decade from present.

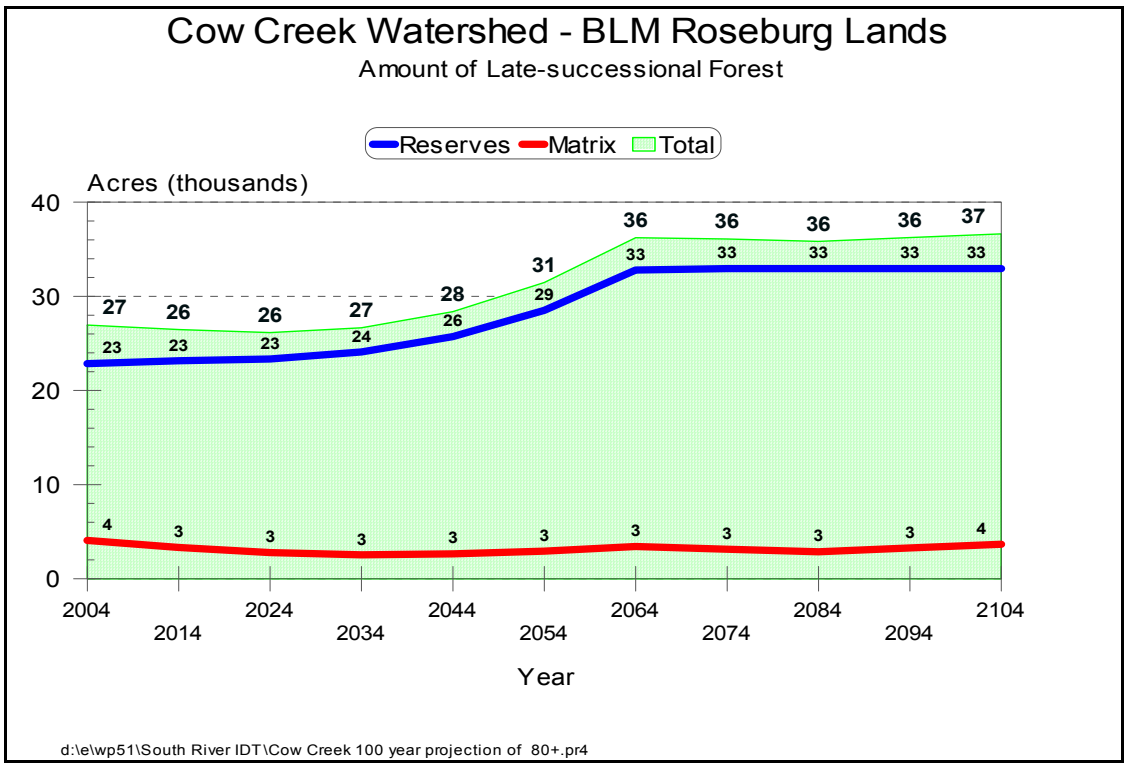

Figure 1

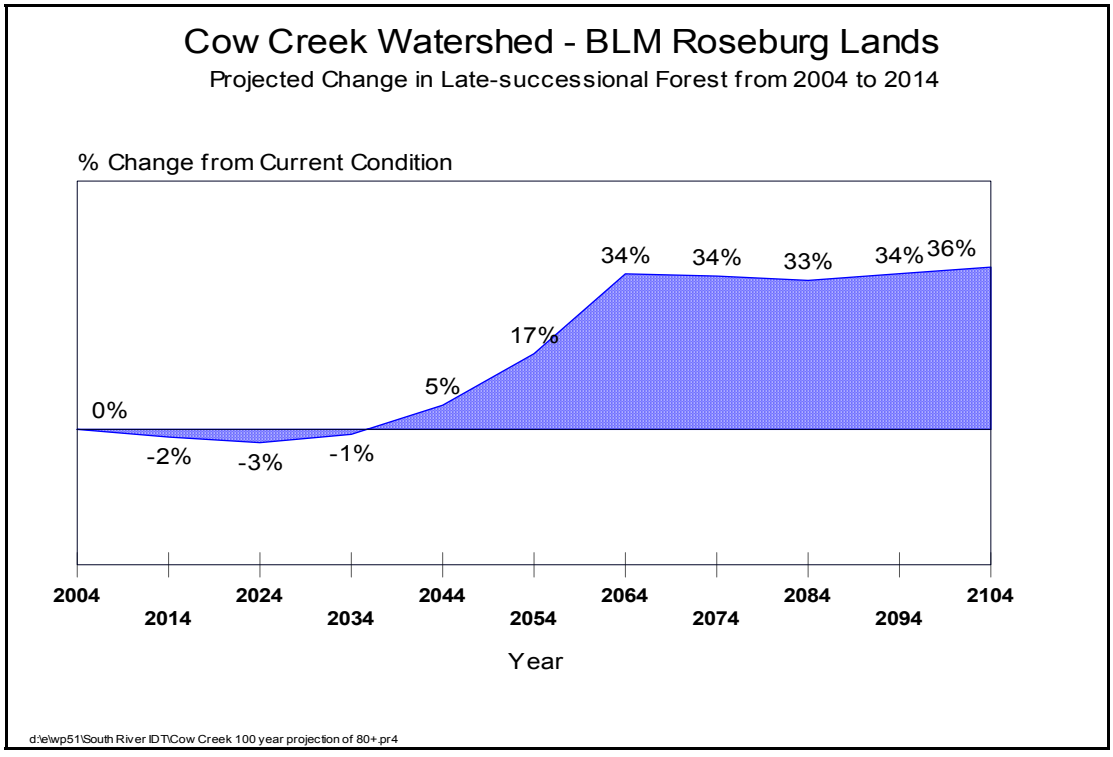

Figure 2

Projection of Age Classes on BLM Reserve LUAs - Cow Creek - 2004 to 2104

10-Year	<	<	<	<	<	YEAR	>	>	>	>	>
Age Class	**2004**	**2014**	**2024**	**2034**	**2044**	**2054**	**2064**	**2074**	**2084**	**2094**	**2104**
0	0										
10	165	0	0	0	0	0	0	0	0	0	0
20	4,273	165	0	0	0	0	0	0	0	0	0
30	2,799	4,273	165	0	0	0	0	0	0	0	0
40	1,625	2,799	4,273	165	0	0	0	0	0	0	0
50	742	1,625	2,799	4,273	165	0	0	0	0	0	0
60	199	742	1,625	2,799	4,273	165	0	0	0	0	0
70	298	199	742	1,625	2,799	4,273	165	0	0	0	0
80	85	298	199	742	1,625	2,799	4,273	165	0	0	0
90	22,777	85	298	199	742	1,625	2,799	4,273	165	0	0
100	0	22,777	85	298	199	742	1,625	2,799	4,273	165	0
110	0	n/a	22,777	85	298	199	742	1,625	2,799	4,273	165
120	0	n/a	n/a	22,777	85	298	199	742	1,625	2,799	4,273
130	0	n/a	n/a	n/a	22,777	85	298	199	742	1,625	2,799
140	0	n/a	n/a	n/a	n/a	22,777	85	298	199	742	1,625
150	0	n/a	n/a	n/a	n/a	n/a	22,777	85	298	199	742
160	0	n/a	n/a	n/a	n/a	n/a	n/a	22,777	85	298	199
170	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	22,777	85	298
180	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	22,777	85
190	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	22,777
200+	0	0	0	0	0	0	0	0	0	0	0
Totals	32,963	32,963	32,963	32,963	32,963	32,963	32,963	32,963	32,963	32,963	32,963
80+	22,862	23,160	23,359	24,101	25,726	28,525	32,798	32,963	32,963	32,963	32,963

Projection for Cow Creek 5th Field Watershed for the 100 year period from the year 2004 to 2104 Jun-04

Projection of Age Classes on BLM Matrix LUAs - Cow Creek - 2004 to 2104

Age Class	Current Condition	End of Decade 1	End of Decade 2	End of Decade 3	End of Decade 4	End of Decade 5	End of Decade 6	End of Decade 7	End of Decade 8	End of Decade 9	End of Decade 10
0	0	787	742	650	349	463	436	389	261	385	349
10	98	0	787	742	650	349	463	436	389	261	385
20	924	98	0	787	742	650	349	463	436	389	261
30	749	924	98	0	787	742	650	349	463	436	389
40	454	749	924	98	0	787	742	650	349	463	436
50	412	454	749	924	98	0	787	742	650	349	463
60	207	412	454	749	924	98	0	787	742	650	349
70	27	207	412	454	749	924	98	0	787	742	650
80+	4,089	3,329	2,794	2,556	2,662	2,948	3,436	3,145	2,884	3,286	3,678
											3,282
Totals	6,960	6,960	6,960	6,960	6,960	6,960	6,960	6,960	6,960	6,960	6,960

Regeneration Harvest Acres from BLM Matrix Lands - Cow Creek - 2004 to 2104

Decade	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Totals	787	742	650	349	463	436	389	261	385	349